



The Future Reimagined

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University of Johannesburg 2020 Stakeholder Report / uj.ac.za



The Future Reimagined

**20
20**
STAKEHOLDER
REPORT

Overview

48 529

Total headcount enrolment

89,2%

Undergraduate success rate

2 276,40

DHET-accredited research publication units (2nd among South African universities)

249

NRF-rated researchers

R514,6 million

Third-stream income

> 320

Publications on 4IR in Scopus

> 17 400

Annual citations in Scopus



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Our vision
 To be an international University of choice anchored in Africa, dynamically shaping the future.

Our mission
 Inspiring our community to transform and serve humanity through innovation and the collaborative pursuit of knowledge.



Our values

- Imagination**
 By harnessing imagination we
Think independently
Exhibit ambition and drive
Adopt entrepreneurial approaches
Develop a cosmopolitan identity
Shape the future
- Conversation**
 In conversation we
Engage meaningfully with one another
Learn together from our diversity
Display mutual respect
Make wise decisions collectively
Lead consultatively
- Regeneration**
 By regenerating we
Develop sustainably through creative contribution
Look inwardly for renewal
Innovate for the common good
Make positive change
Take advantage of overlooked opportunities
- Ethical foundation**
 In our ethical approach we
Treasure academic freedom
Seek balance in the pursuit of knowledge
Face challenges with courage and earn trust in others
Act responsibly by being fair, consistent and transparent
Participate in and help the community by practicing ubuntu*

* *Ubuntu – humanness in the Nguni languages of southern Africa – means achieving excellence through sharing a way of life with others and caring for their quality of life.*



Solar panels at B-Parking, Auckland Park Kingsway Campus (APK)



Environmental sustainability

The Strategic Plan 2025, anchored in the overarching GES goal, requires UJ to continuously improve on its sustainability footprint across its campus and stakeholder activities.

UJ firmly believes that sustainable development is a long-term commitment and aims to contribute to sustainability by reducing its total environmental footprint, while maintaining and further enhancing its contributions to the social and economic development of South Africa as required by the SDGs.

This report highlights specific focus areas and related improvements achieved during 2020. However, it should be noted that 2020, with its mandatory lockdowns due to the COVID-19 pandemic, was not a "normal" year and that many of the targets for sustainability and resource usage were easily met; in many cases the reported performance is so different from the expected performance that this cannot be seen in any way as a trend for the future. For example, electricity consumption was down dramatically because of the reduced number of students in residences and the reduction in lecture venue usage (implying reduced lighting and heating, ventilation and air-conditioning (HVAC) needs) for most of the 2020 calendar year.



Energy management

Carbon footprint

UJ's carbon footprint decreased to 42 405 tonnes of CO₂ compared to 54 156 tonnes in 2019, indicating a 21,8% reduction.

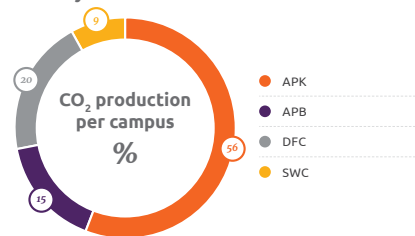
Carbon footprint based on 2020 actual consumption

Emission source	APK	APB	DFC	SWC	Total CO ₂	2020 Total tonnes of CO ₂	2019 Total tonnes of CO ₂
Electricity (kWh)	20 708 411	5 845 577	7 988 701	3 457 593	38 000 280	38 000	50 332
Natural gas (GJ)	1 763 193	357 354	295 886	–	2 416 433	2 416	1 840
Catbot fuel	38 581	–	–	–	38 581	39	247
Petrol (fleet)	163 373	30 746	71 159	61 342	326 620	327	190
Diesel (fleet)	229 424	23 325	54 062	51 435	358 246	358	89
Diesel generators	62 102	–	2 353	47 565	112 020	112	64
Intercampus bus and staff flights	329 816	93 344	130 682	68 452	622 294	622	1 394
Paper used by UJ/KMSA sites	831 905	162 085	356 499	168 182	1 518 671	1 519	n/a
Total kg of CO₂	24 126 805	6 512 431	8 899 342	3 854 568	43 393 146	43 393	54 156
Total tonnes of CO₂	24 127	6 512	8 899	3 855	43 393	reduction	
Solar PV generation (tonnes CO ₂)	271	506	123	88	988	2,28%	
					Total tonnes of CO₂	42 405	

2020 was the first time that UJ was offsetting carbon savings due to solar photovoltaic (PV) electricity generation, creating a 2,28% CO₂ saving.

The 2020 carbon footprint breakdown per campus is depicted below:

Electricity



In 2020, UJ achieved an electrical energy saving of 34,25% against the 2015 baseline (which is the initial value against which we are required to report going forward) for all properties. This is based on an absolute measurement methodology that makes no allowance for infrastructure changes or fluctuations in student or staff numbers.

In addition to the energy-saving initiatives highlighted

in 2019, UJ installed an additional three solar PV plants on the APK, DFC and SWC campuses. In addition, other initiatives are ongoing:

- » The implementation of energy-saving lights (LEDs)
- » Occupancy sensors (implementation in progress)
- » The installation of additional heat pumps,

especially in new and refurbished residences

Continuing with these initiatives, including the further deployment of PV systems together with awareness campaigns, will further improve our savings. Since 2015, savings have been least effective on APK campus due to increased HVAC and the increase in specialist research equipment on the campus.



The following table identifies the 2020 energy savings expressed as a percentage. The months of the hard lockdown (April to August) show very large reductions, while the other lockdown months display the clear impact of the work/study from home that was in place.

Electrical energy savings 2020 (based on 2019 consumption)

Month	APK %	APB %	DFC %	SWC %	Total %
January	(0,35)	(17,25)	(0,28)	(2,22)	(3,06)
February	2,97	(5,69)	5,43	12,86	2,87
March	(7,84)	(10,22)	(3,92)	(35,21)	(10,32)
April	(47,65)	(44,43)	(43,20)	(51,14)	(46,65)
May	(44,46)	(45,07)	(46,14)	(54,78)	(45,98)
June	(28,51)	(26,61)	(36,08)	(40,49)	(30,99)
July	(27,44)	(29,74)	(31,45)	(33,63)	(29,28)
August	(29,37)	(31,30)	(30,58)	(34,65)	(30,50)
September	(28,55)	(28,14)	(26,56)	(31,01)	(28,32)
October	(26,91)	(25,59)	(29,16)	(26,72)	(27,15)
November	(35,80)	(25,88)	(26,73)	(28,18)	(24,51)
December	(27,67)	(19,84)	(18,77)	(23,56)	(16,21)
Total	(26,05)	(26,94)	(25,96)	(31,35)	(26,70)

Electricity generated by the four solar PV installations on the campuses – even though not all were in operation for the full year – accounted for the generation of more than 987 000 kWh – or about 2,68% of electricity purchased from Eskom. In a normal meteorological year, it can be expected that as much as 7,85% of the electrical power required by UJ will be generated from the present solar installations.

Total electricity consumption 2020 (kWh)

Month	APK	APB	DFC	SWC	Total
January	1 976 002	428 621	618 062	295 150	3 317 835
February	2 171 366	572 442	708 194	366 682	3 818 684
March	2 070 569	582 047	692 425	266 989	3 612 030
April	1 343 621	414 129	490 533	221 577	2 469 860
May	1 408 775	424 642	501 887	226 820	2 562 124
June	1 572 323	490 219	565 672	243 758	2 871 972
July	1 776 371	533 174	677 264	306 048	3 292 857
August	1 680 480	508 762	661 373	314 990	3 165 605
September	1 586 862	471 933	646 342	289 527	2 994 664
October	1 793 709	514 644	643 723	314 306	3 266 382
November	1 587 522	440 521	578 789	304 743	2 911 575
December	1 137 653	294 183	406 949	206 296	2 045 081
Total	20 105 253	5 675 317	7 191 214	3 356 886	36 328 670

Natural gas

Sasol natural gas (Egoli Gas) contributed 5,69% to UJ's total carbon footprint. In 2020 there was a saving of 18,1% against the 2015 baseline. This gas is used mainly for food preparation, to generate hot water in residences, and in laboratories for experiments; it has a lower CO₂ footprint per gigajoule (GJ) of energy than coal and is a cleaner source of energy.

Petrol, diesel and travel-related usage

Petrol and diesel fuels are primarily fuel sources for UJ's vehicle fleet and for diesel used in the 84 generators within the University's infrastructure. Petrol and diesel contributed 1,615% to the total carbon footprint. This is a small but growing amount due to the increasing occurrence of load shedding, which has resulted in an increase in diesel for backup power generation, adding 0,27% to the carbon generation. Due to the use of rental vehicles instead of the Innovent fleet pool of vehicles, the carbon generation for vehicle usage cannot be tracked accurately and has not been factored into the UJ carbon generation footprint. In 2021, this factor will be included in the carbon calculation; we are requesting detailed carbon statements from all rental agencies.

Catbot fuel

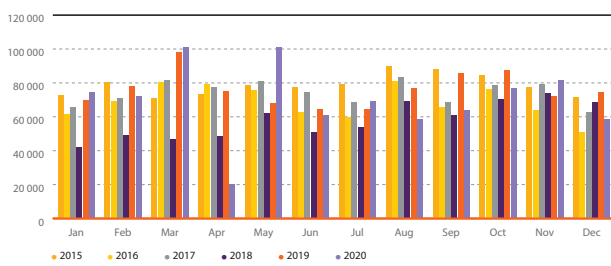
Catbot fuel is used to run two generators to heat water during the five winter months for the central air conditioning system on APK campus. Catbot fuel makes a relatively small contribution to the total carbon footprint, which was even less than normal during the 2020 lockdown for most of winter. Given the extensive water-heating contribution of catbot-fuelled generators – less than 0,09% of UJ's carbon generation – this can reduce the generation by electrical sources using an alternative liquid fuel.

Water management

Marginal water savings were achieved in 2020, with a reduction of 8,4% compared to 2019 and an overall decrease of 11,33% against the 2015 baseline. This was due to the COVID-19 lockdown and also two large water supply pipe failures on campuses due to ageing infrastructure. A request for a proposal to upgrade the water reticulation equipment and piping will be run in 2021. Four new boreholes on the various campuses are now in use and allow for various types of water supply subvention.



UJ total water consumption (kl) 2015–2020



Waste management

Waste generated versus waste recycled – 2015–2020 (tonnes)

Year	Waste generated	Waste recycled	Recycled percentage (%)
2015	1 773,81	506,52	28,56
2016	1 818,89	513,60	28,24
2017	2 333,52	456,66	19,57
2018	2 312,87	521,48	22,55
2019	1 858,48	625,33	33,65
2020	1 409,30	673,86	47,82

Paper usage

For the first time, UJ will actively measure and report on total white paper usage, which is also part of our overall sustainability drive. White paper (especially virgin, i.e. first-time use) has a significant effect on CO₂ production. UJ is attempting to transition to recycled paper with its much lower carbon generation impact.

In 2020 UJ used more than 65 million A4 equivalent pages of white bond paper, of which 25% was recycled paper, increasing the total CO₂ generation by 3,58%. It can be expected that without significant effort to reduce paper usage, this could accelerate to beyond 7,5% in a more normal year.

Looking ahead

The focus areas for 2021 will be to expedite further sustainability projects, such as a possible third wave of solar PV installations on the proposed Media24 site as well as secondary installations on the roofs of student residences on the DFC and SWC campuses, if funds allow. The replacement of geysers with more efficient reverse heat pump solutions in the larger residences is also continuing apace.

Additional areas of focus will include stakeholder engagement, especially with students; the diversification of energy sources with emphasis on renewables, including solar and natural gas; further technology advancements within sustainability in terms of the new building programmes; and the possible trial of an electric vehicle fleet for Operations to use on campuses.